Acute and Reproductive Toxicity to Parasitic Wasp (Non-guideline)

MRID: 45455011
Chemical Name: Pyraclostrobin
PC Code: 099100
EPA DP Barcode: D418951
Test Material: BAS 500 00F
Purity: Pyraclostrobin (23%)

Citation: Ufer, A. 1998. Effect of BAS 500 00F on the parasitoid *Aphidius rhopalosiphi* (Hymenoptera: Aphidiidae) in a laboratory trial. Lab project number: 35874: 1998/11229. Unpublished study prepared by BASF Aktiengesellschaft.

Study Summary: Parasitic wasps (*Aphidius rhopalosiphi*) were exposed to dried pyraclostrobin residues on glass plates at an application rate of 0.28 lb ai/A and then allowed to reproduce on untreated wheat infested with an aphid food source. Negative controls received tap water in lieu of the test substance and dimethoate was used as a positive control at a rate of 0.00006 lb ai/A. Parasitic wasps were collected from a source colony (PK-Nützlingszuchten) and transported to the laboratory as mummies; adult wasps less than 48 hours old were used for the experiment.

Acute exposure phase: The negative control and pyraclostrobin treatment groups each had 3 replicates containing 10 individuals (5 males and 5 females); the positive control only had one replicate with 10 individuals. The residues on the glass plates were allowed to dry before adding the parasitic wasps. Wasps were exposed to residues from each of the treatment groups for a total of 48 hours. Observations were recorded at 1, 2, 4, 24, and 48 hours after the initiation of exposure.

Reproduction phase: After the 48 hour exposure on the glass plate, the wasps were transferred to a plastic cylinder placed over untreated wheat seedlings embedded in soil. The plants had been previously infested with an aphid food/host source, and there were at least 100 aphids per chamber. There were 10 fecundity replicates with each test chamber receiving one female wasp that survived the glass-plate exposure portion of the test. They were placed in the test chamber for 24 hours and allowed to lay eggs on aphid hosts. After 24 hours, the wasps were removed and the parasitized aphids were allowed to develop into wasp mummies for an additional 13 days.

The pyraclostrobin-treated group experienced 30% mortality and also showed sub-lethal effects of a "moribund state" for two of the wasps. No mortality or sub-lethal effects were observed in the negative control; the positive control exhibited 100% mortality within 24 hours of exposure.

The female fecundity portion of the experiment showed a statistically significant reduction in offspring production compared with the negative control.

Table 1. Parasitic wasp observations after exposure to dried pyraclostrobin residues

Endpoint	Negative Control	Pyraclostrobin (0.28 lb ai/A)	Positive Control: Dimethoate (0.00006 lb ai/A)
Mortality (percent)	0	30	100
Reproduction (number of mummies per female)	22	4.4*	N/A

N/A – Reproduction could not be assessed because all of the parasitic wasps died within 24 hours of exposure.
*Statistically different from the negative control

Validity Criteria: The study met the criteria of less than 10% mortality in the control group and greater than 50% mortality in the positive control group.

Classification: Supplemental because the non-guideline study does not fulfill a data requirement.

Reviewer Comments:

- This study was conducted according to Good Laboratory Practices (Federal Republic of Germany) and Mead-Briggs 1992 "a laboratory method for evaluating the side effects of pesticides on the cereal aphid parasitoid."
- The study is scientifically valid.
- This study is useful for qualitative purposes and demonstrates mortality and reproductive effects on parasitoid wasps exposed to dried pyraclostrobin residues at an application rate of 0.28 lb ai/A.

Primary Reviewer: Meghan Radtke, Ph.D.
Biologist, USEPA/EFED/ERB-1
Signature: Meghan Radtke
Date: 5/16/14

Secondary Reviewer: Robin Sternberg
Wildlife Biologist, USEPA/EFED/ERB-1
Signature: Robin Sternberg
Date: 5/16/14